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ORIGINAL ARTICLES.

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APPEARANCES SIMULATING OPTIC NEURITIS DUE  
TO UNSUSPECTED IRREGULAR CORNEAL  
ASTIGMIA.

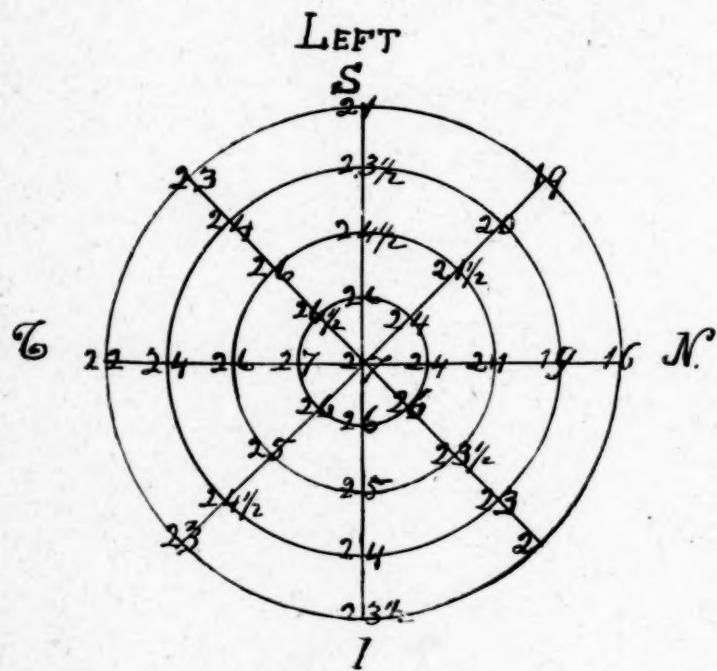
BY SWAN M. BURNETT, M.D., Ph.D.,  
WASHINGTON, D.C.

ON the 14th of February, 1904, Miss H., aged 24, was brought to me by a professional friend of another city. She had been under his care at various times for several years, but for her present trouble he had not treated her. She had, however, been under the treatment of another oculist for many months for what was diagnosticated as "optic neuritis" of the left eye, which had been first noticed after a very severe illness, during which there had been much violent vomiting. It was on recovery from this illness, she claims, that she noticed for the first time a loss of visual acuteness in the left eye, with a horizontal streakiness of letters. There was at no time any considerable pain or redness of the eye. She remembers, however, that there was an inflammation of this eye after measles in infancy. For this "inflammation of the optic nerve" she was treated vigorously, and electricity was applied for a considerable period, but, the patient thinks, with no perceptible result. In fact the state of vision has remained about the same since she first noticed it.

We examined the eye cursorily together. The media were

clear, but both of us detected marked blurring of the retinal vessels near the upper and inner edge of the disc. The edge of the disc elsewhere was clean. Vision in L. = $5/15$ , with a general haziness and horizontal streakiness across all the letters of the test types. R. V.= $5/5$ .

During this preliminary ophthalmoscopic examination I detected a parallactic movement of the indistinct retinal vessels at the upper inner quadrant, which aroused a suspicion



that the phenomena might be due to an irregular refraction.

The case was left in my hands for further investigation and care.

At the next examination the parallactic movement of the vessels was confirmed by both the direct and indirect ophthalmoscopic methods. The disc seemed slightly paler than its fellow, but the retinal vascularization was quite within the normal both as to caliber and course. Under the most careful examination with oblique illumination and a

magnifier it was not possible to detect the slightest opacity of either lens or cornea.

An examination by the ophthalmometer, however, at once revealed the character of the trouble. While the corneal reflection of the mires was quite regular when the fixation was directly in front, as soon as it was turned slightly outward it was at once greatly changed in size and shape. This confirmed the suspicion I had as to an irregular refraction, and located it in the anterior corneal curvature. A systematic measurement of the corneal curve was then entered upon according to the method I had used in making such measurements of a number of cornea in 1892, the results of which were published in the *Trans. Amer. Ophth. Soc.* for that year.<sup>1</sup>

It was thus discovered that the corneal curve became suddenly very much flattened to the nasal side, dropping in fact from 27 at the visual axis to 24 within the first 5°, to 21 at 10°, to 19 at 15°, and 16 at 20°, a total of 11 D. This is shown diagrammatically in Fig. 1, where the refraction in ophthalmometric readings is indicated for every 5° from the visual axis to the periphery, as far as 20°, for the horizontal, vertical and two intermediate meridians. The measurements also show an inverse corneal astigmatism of 1 D.

The shadow test was unsatisfactory on account of the "internal shadows," always found in any form of irregular astigmatism,<sup>2</sup> but there was demonstrated a simple myopic astigmatism of approximately 1 D. against the rule.

No spherical or cylindrical glasses gave any material improvement of vision or relief from "streakiness" of the letters. With a stenopaic hole, however, her vision rose at once to  $\frac{5}{6}$ , and all the blurring and streaks across the letters disappeared. With a stenopaic slit vision was best when it stood obliquely from above outward, downward and inward, that is corresponding to the meridian of most nearly normal curve, and was  $\frac{5}{6}$ — not quite so good as with the hole.

The form under which irregular corneal astigmatism usually manifests itself is that due to alterations in structure from ulcerations or inflammatory changes. Outside of typical conical cornea it is rare to find abnormal irregularity in curvature of any considerable degree with preservation of trans-



parency. One such case I reported at the meeting of the section of ophthalmology, American Medical Association, 1900.<sup>3</sup> This, however, might be properly regarded as a modified form of keratoconus, as the anomaly consisted of a marked flattening of the upper half, and a bulging of the lower half, of the cornea.

In the case now rereported, the defective curvature is limited principally to the nasal and upper quadrant, though the lower nasal quadrant participates somewhat. The remaining portion of the corneal curve does not depart in any considerable degree from what might be considered the normal, in the light of the measurements of 42 eyes reported in the article above referred to.

It will be seen from an examination of the diagram that the refraction to the nasal side falls suddenly within 5° of the visual axis from 27 to 24, and at 10° to 21, a total of 6 D within the space of a medium sized pupil. Through such a surface it is surprising that vision was as good as it was found to be, and the blurring of objects and streakiness are easily accounted for. This irregular astigmatic state also explains the parallactic movements and blurred aspect of the vessels seen by the ophthalmoscope. It likewise offers an explanation of the diagnosis of "optic neuritis" rendered by a competent oculist on the basis of the indistinctness in outline of the vessels in the vicinity of the disc.

It is possible of course, that at the time of the serious illness from which the patient suffered, there may have been a neuro-retinitis, but when our examination was made there was nothing to suggest such a pathologic state, except the blurred vision and the indistinctness of the retinal vessels under the ophthalmoscope and a possible pallor of the optic disc. The fact, however, that the stenopanic hole brought vision to practically normal demonstrates that the reduced visual acuteness was not due to a nerve lesion, but to an optical defect in the form of an irregular corneal astigmatism.

A further lesson to be learned from this case is the necessity of a careful ophthalmometric measurement of the various meridians for at least 10° from the line of the visual axis whenever, with perfectly transparent media, there is a diminished visual acuteness with the phenomena of "streakiness"

M. M. B.

or irregular blurring of the test letters that cannot be accounted for by any of the ordinary demonstrable pathologic causes.

As to the etiology of the abnormal corneal curve, I am unable to offer any satisfactory explanation. It is difficult to connect it with the illness after which her attention was first directed to the visual phenomena. It seems more likely to be congenital and to have been first discovered at that time.

<sup>1</sup>The General Form of the Cornea and its Relation to the Refraction of the Eye and Visual Acuteness.

<sup>2</sup>See article by the author on Some Incidental Phenomena of the Shadow Test, Trans. Amer. Ophth. Soc., 1892.

<sup>3</sup>The Optical Treatment of Keratoconus.

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#### ATROPINE VERSUS ESERINE IN GLAUCOMA.

By W. H. SEARLES, A.M., M.D.

OSHKOSH, WIS.

IN the May number of the AMERICAN JOURNAL OF OPHTHALMOLOGY I published an article showing the successful use of atropine in glaucoma and claiming for it pre-eminence over all other drugs in the local treatment of this disease.

There is no fact in the world of mind or matter that is inconsistent with any other fact, and it is the purpose of this article to show that there is no antagonism between atropine and eserine as regards glaucoma. It is universally accepted that eserine is anti-glaucomatous, and this is not denied by the writer, but he does place it far below atropine.

The one is a myotic and the other a mydriatic, and upon these opposing conditions the theory has become firmly established that the one being anti-glaucomatous the other must be directly the opposite. How, then, is it possible to give atropine any place in the treatment of glaucoma?

It seems to be necessary at this point to show the steps in the evolution by which a different conclusion was reached than now generally obtains as regards atropine in glaucoma.

The writer, early in his practice, had a lady client past 64 years of age who came to him for a change of lenses which a distinguished oculist had recently fitted. It was a case of



rapid progressing presbyopia with chronic conjunctivitis and a possible tendency towards glaucoma.

The treatment was, no further change of the lenses; no near work; smoked glasses to be worn; and medical treatment of the eyes. Among other things atropine was used. The case progressed satisfactorily for ten days, when suddenly the patient was attacked with acute inflammatory glaucoma in both eyes. Assisted by an eminent oculist, a double iridectomy was promptly performed, but without success. She became totally blind for the rest of her life.

Was atropine responsible for this accident? I think it would be so held to-day by any court of experts; but not by the writer.

Who can give a satisfactory reply to the inquiry, Why did this case progress safely for ten days? If the explanation is correct that atropine induces glaucoma by thickening the iris base and consequent obstruction of the iris angle, it should have done so at once. This unanswered inquiry was the first step in the evolution.

A year later another case of atropine glaucoma came under his care in a woman past 50 years of age. She was a victim of chronic trachoma in both eyes and totally blind in one eye from this disease. Vision in the other eye was greatly impaired from a central nebula. Some doctor had given her a solution of atropine for dilating the pupil, which enabled her to see somewhat better. Suddenly she was attacked with glaucoma. I saw the case several days later. She still had some vision, and I advised an immediate operation, which was declined. I then gave her medical treatment as follows: Fl. extr. jaborandi with stimulants, as she was greatly prostrated by pain and want of sleep. This was to be followed by morphia in an hour. She got a good sleep, the first in several days, and awoke in every way improved. Quinine was given during the day and the jaborandi and morphia repeated at night. She made a complete recovery in a few days and has remained well ever since.

It appears that if atropine can induce glaucoma, that jaborandi and morphia can cure it. This is the second step. How did it do it, and would it have succeeded in my previous case?



"Sleep is nature's sweet restorer." It is also a mydriatic. Jaborandi and morphia are myotics. DeWecker says morphia does assist atropine, even though it is a myotic. Jaborandi and morphia as myotics, both together cannot overcome the mydriasis of atropine.

Did this patient get well without regarding either atropine or the doctor? I began to explore this jungle of contradictions and I found that she had used the atropine steadily and was still using it when I first saw her, and that no precaution had been taken against using the eye.

I now saw for the first time that the atropine was possibly not the immediate cause of the glaucoma, but that it was antecedent only, through the intervening of accommodative effort.

The jaborandi and morphia was able to relax the muscle strain and at the same time stimulate the absorbent channels to remove the excess of fluid in the eye, when pain and tension ceased, followed by sleep. How else can it be explained? Sleep will not follow morphia alone in these cases, but it often will jaborandi alone.

The writer found, nearly twenty years ago, by trials upon completed glaucomas that jaborandi would reduce tension. He now conducted a series of observations, extending over three months, upon a case of total loss of vision in both eyes due to malignant glaucoma with highest tension, but in which no secondary degeneration had as yet occurred.

Jaborandi was given regularly once a day, from 15 to 40 drops at bed time. One eye only was allowed to be treated locally. At the end all increase of tension had disappeared from both eyes! and the pupils responded to light tests, showing that the oculo-motor center had been reached. Atropine and eserine were both given prolonged trials, and the fact was established so far as this case was concerned, that it made no difference, as regards tension, whether atropine or eserine was used. The limits of this article will not permit a detailed statement of the work in this case. One thing was certain, there was a complete absence of all accommodative effort. Was that the reason it made no difference whether the pupil was dilated or contracted? It was not a long jump in the dark to frame this into a theory: That the

accommodation must always be reckoned with, whenever atropine is used, without regarding age or condition. This is another step in the evolution.

Let us see if it applies to the first above case. It appears that my client went to bed with no intimation of eye trouble, but in the night a member of the family was taken ill and she was up the rest of the night, when she was attacked with glaucoma before morning. Here was a severe strain upon the ciliary muscle for several hours, while the eyes were paralyzed by atropine. Was that fair, either to atropine or the doctor? Atropine is now perfectly safe in the practice of the writer to use in the presence of any form of glaucoma, providing the muscle is held in abeyance. His client would not have been attacked if she had strictly obeyed instructions to avoid all use of the eyes for near work. Furthermore, the glaucoma to-day would now be quickly suppressed by the writer and vision restored through medical treatment alone. This is sustained by his clinical experience. Atropine is to this muscle what splints are to a fracture, and we should no more use the one than the other while under such control. No one has ever charged atropine with causing strain or spasm, and yet the writer finds that the glaucoma charged to atropine is due wholly to strain or spasm induced by the patient.

It is this that overfills the uveal tract with blood and precipitates the glaucoma. Priestly Smith says: "High tension depends more upon an excess of blood in the uveal tract than upon an excess of intra-ocular fluids." The writer now treats any glaucoma supposed to be caused by atropine by a further exhibition of atropine aided by cocaine and, internally, by jaborandi and morphia. It is the logical answer, for we have no force comparable to atropine with which to subdue ciliary strain or spasm. Best of all, it succeeds, and hence disposes of the theory that atropine can produce glaucoma.

The iris holds a subordinate position in every glaucomatous process. The final effect of atropine upon the eye is to contract the blood vessels of the uveal tract, and hence, among other things, must reduce volume, secretion and tension. The supposed thickening of the iris periphery under atropine is then not tenable, and the glaucoma that follows

must be charged to some other cause. Atropine, then, is never responsible for increase of tension. It is a contradiction of the definition of the action of atropine to say it can be. If, then, it is not material whether a drug is a mydriatic or myotic as regards glaucoma, the whole mystery is cleared away and eserine at once is seen to range itself by the side of atropine. Eserine is anti-glaucomatous only, because in some important points it agrees with atropine. DeWecker says: "Eserine contracts the whole vascular system of the eye and diminishes secretion." Snellen says "it contracts the uveal tract in toto." Priestly Smith says, "it can reduce the turgid ciliary processes so that everything returns to its previous condition." He assists eserine by adding cocaine, "because of its invaluable power in glaucoma of contracting the ciliary bloodvessels and diminishing the sensibility of the ciliary nerves." And yet cocaine is a mydriatic. What may we expect when cocaine is brought to the side of atropine as its natural corollary in facing glaucoma? The writer will not here discuss this phase of the subject more than to say, it renders atropine invincible.

Eserine also reduces volume and tension and pain. The writer has not proven it, but he suspects that eserine is not responsible for spasm of the muscle any more than atropine. The principle of myosis and mydriasis simply must be set aside in the treatment of glaucoma.

The argument that myosis draws the iris away from the angle is not important, because in doing this it obstructs the stream channel at the pupil center and hence must force the iris forward in any event. Eserine is, then, anti-glaucomatous without regarding myosis, and so also is atropine without regarding mydriasis. But if either one holds any advantage over the other it must be mydriasis, because in complete dilatation it removes, for the time being, one side of the iris angle as completely as the best possible iridectomy, and better still, it does it throughout the entire circle.

Glaucoma has at last met the force that is able to subdue it. It is an old familiar one under new conditions. In the hands of the writer, after twenty years of research and practice, it has become a "live wire" and easily does the work. It outranks iridectomy.

## MEDICAL SOCIETIES.

### OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.\*

At a meeting of this Society held on Friday, July 8th, JOHN TWEEDY, F.R.C.S., president, in the chair, Mr. GEORGE COATES gave a lantern demonstration of the pathology of thrombosis of the central vein of the retina. He showed preparations from five cases. In four of these an organized thrombus was found in the central vein; in three of them complete obliteration of the vein in a portion of its course had occurred from this cause, and in one of them the manner of re-establishment of the lumen by the accession of collaterals from the trabeculae of the nerve was well shown. In the fourth case canalization of the thrombus and not obliteration had occurred. In the fifth no thrombus was found, probably because the optic nerve was cut longitudinally in the usual manner, and not transversely, as was desirable when a lesion of the central vessel was suspected. He also dealt with the changes found in the retinal vessels of these cases—namely, (1) endothelial proliferation, (2) thickening of the connective tissue of the walls, (3) hyaline degeneration (a change superimposed on the last), (4) secondary thrombosis. Various combinations of these changes might be found both in arteries and veins. The use of Weigert's elastic tissue stain in researches on vessels was also illustrated.—Dr. H. KNAPP (New York) made remarks on the clinical aspect of thrombosis of the retinal vein.—Card specimens were shown by Mr. Marcus Gunn, Dr. Rayner Batten and Mr. Smyth.

\*British Medical Journal.

THE AMERICAN ACADEMY OF OPHTHALMOLOGY  
AND OTO-LARYNGOLOGY.

NINTH ANNUAL MEETING, DENVER COLO.,

AUG. 24-25-26, 1904.

ABSTRACTS OF PAPERS TO BE READ AS FURNISHED TO THE  
SECRETARY.

The Report of Two Cases of Laryngeal Tuberculosis  
Operated on by Thyrotomy; Comments on the Operation.  
Dr. Otto J. Stein, Chicago.

*Abstract:* History of the two cases operated on by the author. A review of the cases reported in literature. The purpose of presenting the report of these two cases. Indications for the operation. The advantages and disadvantages. Dangers and complications.

The Medical Treatment of Laryngeal Tuberculosis, with Special Reference to the Use of Formalin. Dr. L. B. Lockard, Denver.

*Abstract:* In the treatment of laryngeal tuberculosis in its manifold types no remedy has such a broad field of usefulness as formalin, for it fulfills in varying measure every essential indication. In ulcerative lesions is usually superior to lactic acid, combining cleansing, bactericidal and stimulating, without irritative properties. Strong solutions reduce hyperplastic tissues, producing brilliant results in the vegetative types. It is also efficient in general infiltrations. Usually produces some anaesthesia. In severe cases daily applications of a 3 to 10 per cent. solution, with a spray  $\frac{1}{2}$  per cent. every four hours, is advised. Results depend largely upon maintaining continuous action. Other remedies may supplement, but should rarely supplant it.

The Prognosis of Laryngeal Tuberculosis. Dr. Robert Levy, Denver.

*Abstract:* The crusade against a hopeless prognosis in all cases of laryngeal tuberculosis is going on. On the other hand, there is a decided fear of too much optimism, which is due to limited experience or imperfect diagnosis. The prognosis "means not merely a recognition of the name of the disease, but a knowledge of the nature of the disease, still incomplete, but rapidly gaining in fullness and accuracy." (Dock.) The prognosis of laryngeal tuberculosis must be considered in its relation to pulmonary tuberculosis. It has a bearing upon the pulmonary complication, while the pulmonary disease also influences the progress of the laryngeal affection. Involvement of the larynx in tuberculosis results in an interference with two important functions, namely, phonation and deglutition. Its prognosis should be considered with reference to these two functions, and also with reference to the life of the patient. The nature of the lesion in the larynx, its early recognition, the time of its development, in the course of pulmonary or other tubercular invasion, and the environment of the patient, in which climate plays an important part, must all be considered in determining the progress and ultimate result of the affection.

How Shall We Educate Our Blind Children? Dr. Casey A. Wood, Chicago.

*Abstract:* The chief objects sought in the education of the blind are to make them self-supporting and to enable them to realize health and happiness. The institutional care of blind children, as ordinarily carried out in our asylums, has many drawbacks. Intermarriage among the blind and restricting their daily social intercourse to persons similarly affected are among these evils. The experiment of educating blind children in the public schools has for the first time been tried in Chicago, and has proved decidedly successful. Blind pupils attend classes just the same as children with good vision, and are taught and treated, as far as possible, like the latter. Supplementary teaching is also given them in certain schools. This department of the Chicago public school system is under the care of a very competent superintendent, who is himself totally blind. An account of the methods employed and their

results. Individual examples. Conclusions from this experiment in paedagogy.

Hæmorrhage from the Lacrimal Duct Following Removal of a Style. Dr. J. C. Buckwalter, St. Louis.

*Abstract:* Report of case. Interesting to note how long the style lay dormant. Up to within two months of the time of removal the style had caused no symptoms of irritation. On removal the haemorrhage was profuse and prolonged, apparently not influenced by any anti-hæmorrhagic treatment. Considering the fact that there are no bloodvessels of any consequence in this region, aside from numerous minute arteries and veins, it is remarkable to have serious hæmorrhage.

A Criticism on the Use and Abuse of Lacrimal Probes. Dr. G. F. Suker, Chicago.

*Abstract:* A condemnation of the very large lacrimal probe. The very conservative employment of any lacrimal probe is deemed sufficient.

George Frick's Book: The First American Treatise on Ophthalmology. Dr. J. M. Ball, St. Louis.

*Abstract:* This paper gives an account of the life and writings of George Frick, M.D., of Baltimore, Md., whose treatise, published in 1823, was the first ophthalmologic textbook issued in North America. A copy of the book will be exhibited.

*Thursday—9:30 A. M.*

DEMONSTRATION OF CASES, SPECIMENS OR INSTRUMENTS.

*10 A. M.*

Some of the Accidents and Complications Met With in the Extraction of Cataract. Dr. D. W. Greene, Dayton, O.

*Abstract:* A brief review of the history of the operation, showing the evolution through which the different steps have passed, from Petit, 1706, Daviel, 1745, to the present time. The shifting of the section forward until it is now made entirely corneal. The smaller iridectomy or its entire omission. The different method of opening the capsule and delivering the lens and cortical debris. The so-called toilette of the operation. Combined operation usually made. What are

accidents in and what are complications of the operation. A strict definition of each is difficult. Management of a normal case. Management of accidents and complications. Accidents are usually operative. Complications may be present at the time of operation; may result from accidents during operation, but as a rule are post-operative. Age as such is never a contra-indication. Physical and mental conditions incident to it may be complications. When anæsthetics are used. When anterior leaf of capsule is extracted. When lens is extracted within the capsule. Flannel bandages, lint and cotton compresses. Confinement in bed not rigidly enforced after second day. All of which is intended to lead up to and make clear the title of the paper and the subject treated under it.

**Removal of Anterior Capsule and the Hypodermic Use of Morphia in Simple Extraction.** Dr. Eugene Smith, Detroit.

*Abstract:* Extraction of large central portion of anterior capsule with properly constructed capsule forceps is superior to use of cystotome. In more than 90 per cent. of cases it obviates necessity for discussion of capsule, which is not always a harmless procedure. Many times in cases of thickened capsule the lens may be delivered in the capsule and without loss of vitreous. Ideal method in case of Morgagnian cataract. Hypodermic use of morphine contracts pupil; allays distress following operation; also alleviates tendency to cough, if present.

**The Safest Operation for Senile Cataract.** Dr. H. Gifford, Omaha.

*Abstract:* 1. Discussion of advisability of iridectomy, simultaneous or preparatory. 2. The advantages and disadvantages of a conjunctival flap. 3. Operations with large detached conjunctival flap, including Czermack's subconjunctival operation.

**Complications Following Cataract Extraction in Glaucoma.** Dr. Louis J. Goux, Detroit.

*Abstract:* Cataract due to glaucoma. Report of case. Difficulties encountered in extraction; lens delivered by intraocular pressure. Sequelæ. Post-operative haemorrhage,

corneal fistula. What prophylactic measure would have been advisable?

**Central Superficial Choroiditis.** Dr. T. B. Schneideman, Philadelphia.

*Abstract:* Lesions of the deeper membranes of the eye, objectively appreciable with the ophthalmoscope and not of specific origin, rarely recovering without serious damage to structure and function; the case here reported proves a fortunate exception. A central scotoma, at first with hardly appreciable edema of the macula, presently showed yellowish plaques of choroiditis. A complication, perhaps with some casual relation, was discovered in a purulent discharge from sphenoidal sinuses on both sides. The case terminated in practically perfect recovery.

**Lantern Demonstration on Glioma and the Question of Rosettes.** Dr. A. Alt, St. Louis.

*Abstract:* Since Wintersteiner has first drawn particular attention to certain appearances in glioma, well known before, given them the name of rosettes, and claimed them as due to neuro-epithelial cells, and, in accordance with this, has proposed to call certain gliomata neuro-epitheliomata, further critical studies regarding these points have been but few. Very similar formations are often found in detached and firmly compressed retinæ, but they are not the same thing. Rosettes or similar figures can be formed whenever and wherever glioma cells grow around another tissue or cell, and their presence or absence does not seem to prove that there are several distinct forms of glioma.

**A New Series of Semaphore Charts for Testing Vision of Railroad Employees.** Designed by Nelson M. Black, M.D., of Milwaukee. Dr. H. V. Würdemann, Milwaukee.

*Abstract:* The author makes no claim of originality, but uses the figure of a semaphor signal, pole and all, accurately reduced by scale to represent at twenty feet the actual signal seen at one-half mile (2,640 feet). The colors used are the same as are used in actual practice, and the background is a grayish tinge to represent the average horizon, against which signals with an ideal background are seen. Both the semaphore and the Hall or disc signals are represented.

*Thursday—3 P. M.*

Some Unique Cases of Amblyopia. Dr. T. W. Moore, Huntington, W. Va.

*Abstract:* Three cases of amblyopia occurring in apparently healthy children between the ages of ten and seventeen years; one case treated by the method recommended by L. Webster Fox. Some points of difference between these cases and hysterical amblyopes. Two cases of hysterical amblyopia possessing interesting features.

The Toxic Amblyopias, with Special Reference to those Produced by Tobacco and Coffee. Dr. A. E. Bulson, jr., Ft. Wayne, Ind.

*Abstract:* References to coffee amblyopia but few and brief in ophthalmological literature. Visual disturbances not uncommon in persons who drink coffee to excess, and trouble corrected in some by abandoning use of coffee, while in others active treatment is required to restore function. Concentric contraction of the visual fields for all colors, usually with, but sometimes without, marked impairment of central vision, the most conspicuous manifestation. Persistent central scotomas, not observed. Asthenopic symptoms and scintillating scotomas not uncommon. Aside from slight pallor of the temporal half of the disc in two cases there were no fundus changes noted by ophthalmoscopic examination in the cases under observation. Casey Wood's theory, that many of the toxic amblyopias are due to the production of ptomaine poisoning by the particular toxic agent taken into the system, is thought to be a reasonable explanation of the occasion of coffee amblyopia. Reports of cases. One case observed through two relapses. Another marked case seemed to be produced by the combined effect of tobacco and coffee, but did not improve until the use of coffee was abandoned. Permanent atrophic changes would probably result in long continued cases. In recent cases prognosis good. Treatment the same as for other toxic amblyopias. Elimination essential. Strychnine brings about early improvement of central vision and widening of vision fields.

Cases of Retinitis Pigmentosa. Dr. J. Elliott Colburn, Chicago.

*Abstract:* Predisposing cause not known. Exciting causes: Consanguinity, hereditary or acquired syphilis, and certain toxins, either generated in the digestive track or introduced in the form of xanthin, or xanthin-producing ingesta. The prognosis is not necessarily unfavorable in toxic form. Report of eight cases. One of consanguinity, two hereditary syphilis, two general sclerosis, three with local sclerosis (?), coffee and tea toxæmia. Treatment: Dietetic, eliminative and stimulating.

Remarks on the Need for Thorough Aseptic and Anti-septic Work Prior to, During and After Cutting Operations on the Eyeball. Dr. B. E. Fryer, Kansas City, Mo.

*Abstract:* The paper proposes to very concisely set forth the need for a greater effort to obtain an aseptic condition of the conjunctiva and its surroundings previous to eye operations; to call attention to some of the main factors required for successful working towards this objective; moreover, to show that those who are inclined to doubt the possibility of an eye asepsis are in error; also to point out the most approved methods.

The Use of Pure Nitric Acid in the Treatment of Diseases of the Eye. Dr. J. W. Bullard, Pawnee City, Neb.

*Abstract:* Very little has been written on the subject. Is one of the most powerful escharotics in the mineral acid group, but as it coagulates the albumen of the tissues without redissolving it, it in this way safeguards its own excessive action. In the great majority of cases its action is just as effectual as is the actual cautery, over which it possesses many advantages, both to the surgeon and patient. Mode of application. Its use is indicated in all infected ulcers of the cornea and conjunctiva. In fact, may be used in any case where a cauterant is indicated. Possesses advantages over both carbolic acid and iodine. Is very serviceable in the obliteration of chronic vascular conditions of the cornea, and in the after treatment of the pterygium operations.

Some Experiences with Adrenalin Chloride. Dr. D. E. Welsh, Grand Rapids, Mich.

*Abstract:* Danger arising from the hypodermic use of chloride of adrenalin in chloroform anesthesia.

Notes on the Use of Dionin. Dr. Thos. C. Hood, Indianapolis.

*Abstract:* 1. Statement as to the drug itself, chemical name and composition. 2. Short résumé of reports on it by those who have used it, with the rationale of its action and physiological effect. 3. Notes of its use in cases of my own. 4. Conclusions.

Experiments with Radium in Some Nose, Throat and Ear Diseases. Dr. J. C. Beck, Chicago.

*Abstract:* General consideration of "Radiotherapy." What is radium? Scientific experiments and tests of radium. Its therapeutic uses. Five cardinal questions answered by letter from a number of physicians using radium. Clinical experiments by means of radium in: 1. Carcinoma of the larynx; 2. Tuberculosis of the larynx; 3. Sarcoma of the nose (intranasal); 4. Tuberculosis (primary) of the septum; 5. Specific ozena; 6. Intranasal neuralgia (marked); 7. Tinnitus aurium (marked); 8. Chronic suppuration of the middle ear; 9. Lingua nigra. Comparative experiments of radium and X-rays. Conclusions.

*Friday—9:30 A. M.*

DEMONSTRATION OF CASES, SPECIMENS OR INSTRUMENTS.

Dr. H. V. Würdemann, of Milwaukee, will exhibit photographs and specimens of tumors of the eye and orbit.

SYMPOSIUM ON NON-SUPPURATIVE OTITIS MEDIA.

1. The Etiology and Diagnosis of Acute Non-Suppurative Otitis Media. Dr. W. C. Bane, Denver.

*Abstract:* Etiology: Exposure to cold or wet when body is overheated; in children during teething; extension of pharyngitis to the ear; complication of measles; fluids entering the middle ear through the Eustachian tube. Diagnosis: A feeling of heat and fullness in the ear; pain, at

first intermitting; dullness of hearing; membrana tympani congested and later bulging, discharge of serum and mucus.

**2. The Treatment of Acute Non-Suppurative Otitis Media.** Dr. E. Pynchon, Chicago.

*Abstract:* The ideal treatment in the early stage of acute otitis media is the prompt use of the intratympanic air douche. Inflation in this condition has been both praised and condemned by different writers, though all appreciate the fact that a cure can be promptly affected by the re-establishment of tympanic drainage and restoration of atmospheric equilibrium. Politzerization, when strong enough to pass the tubal occlusion, is painful, and has carried into the tympanum infective material from the tubal orifice so as to intensify the inflammatory process in the middle ear. In order to abort an acute catarrhal otitis the writer has for several years successfully supplied the constant air current, suitably medicated, with a catheter, beginning with low pressure and gradually increased as required. As an air douche it cleans the Eustachian tube of infective material and eventually passes the constriction. In addition to the air douche, hot 1 per cent. phenol douches are used, several times daily, in the external auditory canal, and during the interval dry heat, preferably with a Japanese hot box. Lastly, if resolution does not follow, then a paracentesis is required. In addition to these steps, general treatment is given as indicated.

**3. The Diagnosis and Differentiation of Chronic Non-Suppurative Otitis Media.** Dr. W. L. Ballenger, Chicago.

*Abstract:* 1. Acute catarrhal otitis media: *a.* Acute suppurative otitis media; *b.* Acute tubal catarrh; *c.* Acute myringitis; *d.* Foreign body in the external meatus; *e.* Traumatism through the external meatus; *f.* Ear-ache from the presence of adenoids.

2. Chronic catarrhal otitis media vs.: *a.* Adhesive otitis media; *b.* Oto-sclerosis spongifying; *c.* Labyrinthitis; *d.* Pressure on auditory nerve; *e.* Impacted cerumen.

3. Adhesive otitis media vs.: *a.* Chronic catarrhal otitis media; *b.* Adhesive obstruction of Eustachian tube; *c.* Oto-sclerosis; *d.* Labyrinthine diseases.

4. Oto-sclerosis vs.: *a.* Adhesive catarrhal otitis media;

*b.* Otitis media catarrhalis chronica; *c.* Tubal catarrh and adhesive obstructions; *d.* Labyrinthine diseases.

4. The Treatment of Chronic Non-Suppurative Otitis Media. Dr. M. A. Goldstein, St. Louis.

*Abstract:* Three empirical subdivisions of the stages and development of chronic non-suppurative otitis media may be made.

1. The early stages of hypertrophic catarrhal otitis media.
2. Advanced stages of hypertrophic catarrhal otitis media.
3. Sclerosis and rarefaction of the bony capsule of the labyrinth.

The treatment of these several subdivisions of chronic non-suppurative otitis media will be given consideration under their respective heads:

1. *Early Stages of Hypertrophic Catarrhal Otitis Media.*—The swollen condition of the mucous membrane and exudation cause stenosis of Eustachian tube and retraction of membrana tympani. For relief, use Politzer bag or catheter, repeating daily or as frequently as improvement in hearing and decrease of feeling of fullness in ear indicate. When exudation is profuse in tympanic cavity, incision of membrane may be necessary to drain. As nasal and post-nasal mucosa are usually provoking factors, they should receive careful attention. The alkaline nasal spray, saline irrigation, post-nasal wash, astringent applications to pharyngeal mouth of Eustachian tube, vaporization with inflation and adrenalin applications should be used. If adenoids or hypertrophied faecal tonsils are present, they should be removed. Hypertrophied turbinals or septal deflections or projections, if interfering with proper aeration of Eustachian canal, or exciting constant irritation to mucosa or erectile tissue, should be disposed of. If general condition is below par, tonics and systemic medication are indicated. Climatic conditions may often influence the progress of these cases. Prompt attention to these many features of the early stages of chronic catarrhal otitis media offers favorable prognosis.

2. *Treatment of Advanced Stages of Chronic Catarrhal Otitis Media.*—Under this subdivision we include long-standing plastic exudation and adhesions in the tympanic cavity,

with retraction of membrana tympani and fixation of ossicles. The Politzer bag and catheter are especially indicated. Where narrowing of Eustachian tube has occurred, the whale bone bougie and the gold electrolytic bougie have frequently been effective. Recent fixation of ossicles and slight adhesions may be broken up by repeated massage either with a hand masseur or an electric massage pump. Recently, vibratory massage has been introduced. The massacon, an ingenious form of vibratory pheno-massage, has been presented. Operative treatment, such as tenotomy of the tensor tympani and excision of ossicles in ankylosis have been frequently tried and have failed. Inflation of medicated nebulae are of benefit. Injections through the Eustachian catheter into the tympanic cavity are effective in many cases. Mild solutions of iodine, menthol and pilocarpine are used; iodine and menthol in an oily menstruum give best results. Internal therapeutics in this stage are of little value. Climatic conditions may influence progress and prognosis of this stage, as well as in the earlier stage.

3. *Treatment of Sclerosis.*—In a definitely diagnosed case of sclerosis, all treatment has thus far been found useless. Too much emphasis cannot be laid on the necessity of a careful differentiation between the hypertrophic and the sclerotic form of otitis media chronica catarrhalis. The Bezold Ton-Reihe should be employed in the differentiation tests. The patient should be honestly informed that his case offers but little hope of improvement.

5. The Prognosis of Chronic Non-Suppurative Otitis Media. Dr. J. A. Stucky, Lexington, Ky.

*Abstract:* Accuracy of prognosis depends upon accuracy of diagnosis. The element of uncertainty in both. Prognosis depends on the type of the case, age, occupation; dyscrasia and heredity have to be considered in connection with local and systemic conditions. Evidence of improvement and success in handling these cases increasing in last few years. Danger of over-treatment. Brief comments on treatment now chiefly used, with suggestions.

What Constitutes Proper Nasal Treatment for Ear Diseases. Dr. Jno. A. Donavan, Butte, Mont.

*Abstract:* Uniformity in theory but not in practice.

Always negative pressure in naso-pharynx in proportion to nasal obstruction, increased greatly by unfavorable conditions; produces rarefaction in canals and collapsed ear-drums; turgescent membranes prolong the rarefaction and increase symptoms till chronic trouble results. Every nose already producing pathologic symptoms in ears should be made practically anatomically perfect. Every spur removed, but membrane preserved. Septum straightened, U incision, both ends of incision carried up entirely through the cartilage to the skin; splints injurious. Enough middle turbinate removed to relieve obstruction; edge of lower turbinate with saw and scissors. Mechanical saw, burr or trephine shortens and simplifies operations. Many advantages in immediate operation; active after-treatment not necessary; plugging contra-indicated. Immediate thorough operative treatment advisable, remembering always it is a person, not simply an organ we are dealing with.

Turbinectomy. Dr. D. S. Reynolds, Louisville, Ky.

*Abstract:* An efficient means of relieving obstructions due to malformations of the septum. It often relieves the distressing symptoms due to adenoid vegetations in the vault of the pharynx. In many cases it relieves deafness, by taking away the obstruction at the inferior extremity of the Eustachian tube. The operation should be as complete as possible, and is followed by no disturbance of the lacrimal apparatus. It allows not only the free passage of air through the nose, but affords drainage to the crypts and sinuses above. It should be done in all cases of nasal polypus.

*Friday—3 P. M.*

The Tympano-Mastoid Operation in Chronic Suppurative Otitis Media. Dr. A. H. Andrews, Chicago.

*Abstract:* Clinically there are two classes of cases, surgical and non-surgical. Early differential diagnosis is desirable but not always possible. Objects of the operation: 1. Removal of diseased tissue; 2. To provide for free and permanent drainage; 3. Improvement in hearing when possible. Dangers of the operation: 1. To the facial nerve; 2. To the semicircular canal; 3. To the lateral sinus; 4. To the middle fossa; 5. Accidental removal of stapes; 6. Con-

euision from use of chisel and mallet. Cadaver experience necessary for thoroughness and safety. Instruments required. Methods of operating. A tongue-shaped flap made from skin of posterior superior wall of auditory canal is held in place by suture. Immediate closure of post-auricular incision. An enlarged auditory meatus facilitates after-treatment and lessens danger of future complications. Care necessary in the after-treatment to secure good hearing and to prevent exuberant granulations interfering with the healing process.

Keratosis of the Throat. (Illustrated.) Dr. Hal. Foster, Kansas City, Mo.

*Abstract:* The etiology: Where does it exist? The spores will be discussed. Pathology: The bacteria and stains. Symptoms: Local only; general health not affected; Diagnosis: Photographs will be presented; the spores may extend into the larynx, but as a rule are confined to the pharynx, lingual or faucial tonsils. Prognosis: good. But exceedingly annoying to nervous patients; should be corrected. Treatment: medical and surgical; antiseptics; applications; use of curette and galvano-cautery.

Ordinary Tonsillotomy, With Exhibition of New Instruments. Dr. E. Pynchon, Chicago.

*Abstract:* The tonsil is often semi-submerged, or so attached to the pillars that a partial separation is required before removal. For years the most popular tonsillotomes have been either the Mathieu or the Mackenzie types, the former pulling the tonsil out from its bed, while the latter, by pressure upon the pillars, is intended to attain the same result. I wish to present a new tonsillotome of the Mackenzie type, in which the handle is in straight line with the blade, and so shaped that it can be used equally well with either hand, and strong pressure applied, while the tonsil is being pulled through its fenestra by a forceps of new design, with slender shafts and bull-dog grasping jaws, which, like the tonsillotome, can be easily handled with either hand by an operator not possessed of the ambidextrous accomplishment. A mouth-gag should always be employed. I am now using a Ferguson gag so modified as to engage the incisors

only. For illumination an electric head lamp should be used, the child being held by a trained assistant.

**Grave Hæmorrhage Following Tonsillotomy.** Dr. L. C. Cline, Indianapolis.

*Abstract:* 1. The liability to be misled as to a hæmorrhagic diathesis with all the ordinary precautions. 2. The failure of hæmostatics locally applied. 3. The sustaining of the patient by replacing the lost blood by calcium chloride and normal salt solutions and strychnia hypodermatically.

**Pharyngocèle.** Dr. W. D. Black, St. Louis.

*Abstract:* Pharyngocèle is a pouch or diverticulum of the pharynx. *Etiology:* Regarding the true origin of these pouches, there seem to be different opinions among writers on the subject. *Apparent cause:* First, congenital defects in developement; second, weakness of some part of pharyngeal wall; third, those due to stricture and developmental defects in the esophagus. *Age in which they occur:* The author believes that all those cases occurring under thirty years of age are due to defects in developement, except those due to strictures of the esophagus; over thirty, they should be classed under the head of the acquired form. *Symptomatology:* Rejection of food; dysphagia without pain; tumor at the side of the neck, etc. *Diagnosis:* Usually not difficult. *Prognosis:* Not dangerous to life in the majority of cases; Mackenzie and others report cases where the disease had existed for forty years. *Treatment:* Diet, proper eating and drinking; electricity, massage, bandage to the neck and surgical.

*Report of case:* Mr. X., aged fifty-four years, white, weight 170 pounds, occupation farmer. Previous history good; no specific or organic disease; patient apparently healthy; about two years ago patient experienced a soft mass protruding into back part of mouth and recurring at irregular intervals; there was no pain on deglutition. After some time patient claimed he could catch the mass between his molars, and there was very little pain on pressure. The mass appeared to rest on the base of the tongue when a digital examination was made, but only long enough to get a fair view of it. *Treatment:* Instructed patient about diet, and to

thoroughly masticate his food; electricity and strychnia; no great improvement. One month later patient died from suffocation.

A Case of Unilateral Nystagmus, with Remarks on the Probable Cause. Dr. S. Kirkpatrick, Selma, Ala.

*Abstract:* A very rare affection. Horizontal type; nearly all of the cases previously reported were of the vertical type. Refractive error the probable cause, as it was controlled by wearing a full correction for her anisometropia and oblique astigmatism.

Further Experience and Treatment of Keratoconus. Dr. J. A. L. Bradfield, La Crosse, Wis.

*Abstract:* Keratoconus in the incipient stage is not only curable, but considerable ectasia of the cornea can be reduced to normal corneal tissue. When the ectasia has advanced till the cornea becomes thinned, palliation is only possible and vision greatly impaired. Report of four cases illustrating the different stages and results of treatment.

The Burr in Mastoid Operation. Dr. A. Barkan, San Francisco.

*Abstract:* The advantages of using the burr in preference to the chisel and mallet. The early difficulties in securing proper and sufficient power and control of the burr. A description of the instrument and its application to the bone. When to change to a smaller burr. Special advantages in using the burr in approaching the lateral sinus. The burr as an instrument for removing the intervening bridge of bone. The use of the strabismus hook as an aid in removing the spur remaining. The use of the burr to the exclusion of the mallet and chisel. Exposing the tegmen tympani. Advantages: *a.* Lessening of shock; *b.* Shortening of time; *c.* The safer instrument; *d.* Facilitating the finishing touches; *e.* The beauty of the operation.

## ABSTRACTS FROM MEDICAL LITERATURE.

BY W. A. SHOEMAKER, M.D.

ST. LOUIS, MO.

### FOREIGN BODIES IN THE EYE AND THEIR REMOVAL WITH THE ELECTRO-MAGNET.

Wilbur B. Marple, (*Medical Record*, June 25) after discussing this subject carefully, recapitulates as follows:

1. An eye in which a piece of iron or steel is buried invariably deteriorates, and ultimately becomes blind (siderosis bulbi) if the foreign body is not removed, unless it becomes completely encapsulated. In many cases this degeneration is preceded by the symptoms of hemeralopia.
2. If the foreign body is in the anterior segment of the eye, the Haab magnet is almost universally used, at least to get the particle into the anterior chamber.
3. The injury in the great majority of cases, when it is in the anterior segment of the eye, is not attended with a prolapse of the iris, and the occurrence of this complication makes it probable that the foreign body has not penetrated the globe. This symptom, however, is not a reliable one in case the foreign body has made a large or irregular wound in the eye.
4. If the foreign body has penetrated into the vitreous, or posterior part of the globe, localization, either with the sideroscope or X-ray, had better precede any attempt to extract it, especially if the lens is still transparent. After the particle has been localized it can be removed by way of the anterior chamber with the Haab magnet, or by opening directly into the sclera near where the particle has been located. As to which is the better method to be employed in this class of cases, is still a matter of discussion among *ophthalmologists*.
5. If the symptom of pain cannot be elicited with the Haab magnet, this is to be interpreted as evidence (*a*) that there is no foreign body in the eye; (*b*) that it is enveloped,

in recent cases, in a fibropurulent exudation, or a blood-clot (Fehr's case), or, in less recent cases, that it is firmly encapsulated; (c) that it has passed entirely through the globe and is lodged partly or wholly in the orbital tissues (double perforation).

HOT WATER APPLIED DIRECTLY TO THE CORNEA IN THE TREATMENT OF CORNEAL INFILTRATIONS.

Manolesco (*Ann. d Oculist*, March, 1904): The effect of heat on the migration of leucocytes led the author to experiment with the action of hot water in deep infiltrations of the cornea, especially in parenchymatous keratitis. After cocaineization, hot water (80° to 90° C.) is allowed to fall drop by drop on the cornea. This application is continued from five to ten minutes and is repeated twice a day. The circumcorneal injection is increased and corneal vascularity becomes more apparent. This condition lasts from two to five hours.

Conclusions drawn from twelve cases treated in this manner are as follows: (1) In parenchymatous keratitis the treatment is superior to other local treatments; (2) it hastens the resorption of corneal infiltrations and serves also as an irritant; (3) it is easy to apply and is not followed by any ill effects even if the water is a little too hot.—*Inter State Medical Journal*.

EYE-STRAIN AS A CAUSE OF HEADACHE AND OTHER NEUROSES.

Simeon Snell, (*The Lancet*, London, April 30) after discussing this subject summarizes his paper under the following conclusions:

1. That eye-strain is the cause of a large proportion of headaches, often of a very aggravated character.
2. That various other neuroses are met with in association with headache, and among these may be mentioned the following: mental depression, nausea, indigestion, vomiting, insomnia, giddiness, choreiform movements of the eyelids and face, etc.
3. That relief is afforded to these conditions by correcting the error of refraction, which can be ascertained only after careful examination.
4. That for such examination a mydriatic is absolutely essential.
5. That frequently no complaint is made of defect of vision.
6. That the ametropia is frequently of low degree, 61.2 per cent. of my cases needing

0.75 D. cyl. and weaker. 7. That a cylinder of 0.25 D. is of great value. 8. That anisometropia is frequently present and requires proper adjustment. 9. That in a certain number of cases the muscle balance is faulty and necessitates the prescribing of prisms.

#### DIONIN AND ACOIN.

G. De Wagner Hallett (*Hom. Eye, Ear and Throat Jour.*, June) gives the following extracts from Darier's "Ocular Therapeutics."

*Dionin.*—The action of dionin is lymphagogue, deterotive, eliminatory, resolutive, stimulant and analgesic. Under its use the lymphatic channels become distended to ten times their original dimensions. Resolutive action is in proportion to the amount and duration of the chemosis. Patients with gout, Bright's disease and arterio-sclerosis respond with marked intensity. There is a variable action in young and vigorous persons. It has pronounced action in the scrofulous and lymphatic subject, but less so than with Bright's and heart disease.

#### MODE OF EMPLOYING DIONIN.

A 2 per cent. solution is a good strength with which to start. It is better not to prescribe the solution for patients' use until you have demonstrated its reaction on that particular person.

Instill cocaine first; then a drop of dionin, and wait several minutes to observe results; then another drop. Do this particularly in those suspected of a lively reaction.

In those with good circulation the lymphagogue action is but slight, and chemosis sometimes cannot be obtained. There will be but slight swelling of the conjunctiva, with dilation of the bloodvessels and always a peculiar brilliancy of the cornea.

The first application will be more effective than the second, made the next day, but after an interval of several days it will again be like the first.

Tolerance is often produced after several days of use, and then it is without reaction.

Once you know how the particular patient will react you can prescribe it for home use.

Instilled into the conjunctiva on the day of a subconjunc-

tival haemorrhage, it causes a pink chemosis, the blood being imbibed by the fluid in the lymph spaces. It is supposed to dissolve the altered red corpuscles and revive the leucocytes. The disappearance of the haemorrhage is hastened.

Hæmorrhage in the anterior chamber absorbs more rapidly if dionin is used.

It favors cicatrization of corneal wounds after operation. But harm may come through the *violent sneezing* that it often causes.

In slight abrasions and traumatisms of the cornea you may order five or six times a day a drop of

Dionin .....	gr. jss.
Cocaine hydrochlorate.....	gr. jss.
Sol. cyanide of mercury 1-2000 .....	5 ijss.

With already infected wounds use the cyanide stronger, 1-1500 or 1-1000. Here the solution may be ordered hourly or half hourly.

When using the solution for corneal infiltration or slight parenchymatous keratitis, it is well to add a 2 per cent. sodium chloride for the purpose of augmenting the entrophic action of the dionin.

Dionin.....	gr. jss. to gr. iij.
Cocaine hydrochlorate.....	gr. jss.
Sodium chloride.....	gr. iij.
Sol. cyanide of mercury 1-1000 .....	5 ijss.

Where the iris is or may be involved add atropine:

Atropine sulphate (neutral) .....	gr. $\frac{1}{3}$ to $\frac{2}{3}$ .
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In the same way, if a contracted pupil is desired, add:

Pilocarpine hydrochlorate .....	gr. ss. to gr. jss.
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If the case be one of glaucoma, the cocaine must be omitted and then add:

Eserine sulphate .....	gr. $\frac{1}{3}$ .
Pilocarpine hydrochlorate .....	gr. $\frac{2}{3}$ .

This collyrium has the advantage of stopping promptly the painful phenomena of glaucoma, diminishing the intra-ocular tension and contracting the pupil, while it hastens the clearing of the cornea. Its employment is favorable for preparing the eye for operation in all forms of glaucoma when the phenomena of irritation are too violent to permit of immediate surgical intervention.

*Acoin* is a medicament discovered and produced by Heyden's chemical laboratories near Dresden. In man, instilla-

tions are only effective when there exists a solution in the continuity of the corneal or conjunctival epithelium. Under such circumstances it has an analgesic action which lasts for several hours, depending upon the strength of the solution used. It is therefore valuable in burns and traumatic erosions of the cornea. Acuin is non-toxic. Seven and a half grains introduced in capsules into the empty stomach of a dog produced no symptoms. One half this amount of cocaine used in the same way killed a dog, weighing 11 pounds, with violent tetanic cramps. A concentrated solution instilled into the eye of a rabbit produced an anaesthesia lasting several days, and at the same time a lively irritation of the cornea and conjunctiva. Used in a rabbit's eye, anaesthesia resulted as follows:

- 1-1000 anaesthesia for 15 minutes.
- 1-400 anaesthesia for 30 minutes.
- 1-200 anaesthesia for 60 minutes.
- 1-100 anaesthesia for 80 minutes.
- 1-40 anaesthesia for more than a day.

The last named strength produces considerable irritation but no permanent trouble. A 6 per cent. solution subcutaneously used on a rabbit caused a slough when more than 3 c.c. was used. Not so with weaker solutions.

Solutions of acuin are very antiseptic. They should be kept in the dark. After a week some deterioration takes place, and it is perhaps better to prepare the solution immediately before it is used. Acuin is precipitated by the least trace of alkalinity, and to avoid that it is necessary to wash the flask in which it is proposed to make a solution, with an acid such as nitric, and then with distilled water before it is used. Hot water should not be used to make solutions of acuin. A few drops of the 1 per cent. solution of acuin added to solutions of dionin, or mercury cyanide, or the two combined renders their subconjunctival employment almost completely painless. It is desirable to render the conjunctival puncture painless, and an instillation of cocaine may be first made.

#### ACOIN AS A LOCAL EPITHELIAL ANESTHETIC.

Following the method of Schleich, Darier used acuin to render the skin insensitive in such a manner as to facilitate

small operations. Using various other ingredients, he finally settled upon the following as giving the best results:

Acoin .....	gr. jss.
Na Cl .....	gr. xij.
Distilled water .....	5 iij. M.

Ethyl chloride was tried as a method of making the first needle prick painless, and it was found that the spray was more painful than the prick alone. It was then abandoned.

The first insertion of the needle is slightly painful, but very much minimized by injecting very slowly. A few drops so injected cause a wheal of about two-fifths of an inch in diameter. This can be enlarged at will and painlessly by making any number of further injections near the edge of a previously made wheal. The anaesthesia so produced lasts longer than with the solution of Schleich. There are no consecutive pains. The area of insensibility is maintained perfectly for forty or fifty minutes and then gradually contracts.

#### ARTERIO-SCLEROSIS AND ITS BEARING UPON CERTAIN LESIONS OF THE RETINA AND OPTIC NERVE.

Chas. Stedman Bull (*Annals of Ophthal.*, Jan.) in discussing the subject, refers to the attention that has been given the pathology of endarteritis and endophlebitis of the retinal vessels, and to the fact that the clinical side of the question has been practically lost sight of.

Certain changes in the retinal vessels, characterized by the appearance of white stripes along the vessels, are recognized as opaque whitish tissue due to inflammatory exudation in the walls of the vessels. This condition is of importance as an indication of similar conditions existing in other parts of the body and is often a warning signal of impending cerebral apoplexy. It is often met with in diabetis and renal diseases, but we have learned to look upon it as the cause and not as the result of nephritis.

In certain diseases of the retina, as retinitis albuminurica, we have a proliferation which may double the thickness of the walls, and narrow or close the lumen of the vessels, without being visible with the ophthalmoscope. A point brought out by Raelmann's investigations is the close resemblance between closure of the lumen of a vessel by an embolus or a thrombus, and the same condition due to endarteritis obliterans.

nodosa. He has proved by the microscope that this condition may occur without a thrombus, by proliferation of the intima, completely closing the lumen of the artery with all the subjective symptoms of sudden blindness from embolism. In arterio-sclerosis the process is not confined to the blood-vessels, but the parts supplied by these vessels participate in the form of interstitial inflammation or proliferation.

Arterio-sclerosis begins in the smaller vessels and thence extends to the larger branches. We are fairly familiar with the effect of this disease upon the retina and the clinical symptoms observed in these cases. But we are not so familiar with the effect on the optic nerve. Circumscribed atrophy of the optic nerve may be caused by sclerosis of the internal carotid and ophthalmic arteries, which induce dilatation of these vessels in places, hardening of the walls and pressure on the optic nerve by mechanical means. He suggests that perhaps many of the cases of scotoma and temporal limitation of the field of vision, not showing any ophthalmoscopic changes, may be due to this cause. He is also inclined to think that many of the cases of so-called simple chronic glaucoma are cases of atrophy of the optic nerve due to retrobulbar arterio-sclerosis of the ascending internal carotid, or ophthalmic or anterior cerebral artery, which, by pressure on the optic nerve posterior to the foramen, has caused the descending atrophy.

Wherever the location of the pressure, the resulting atrophy of the nerve is at first a pure "pressure atrophy," which is propagated downward and forward toward the disc, and upward and backward toward the chiasm. Later in the course of the disease, there is probably added to this a secondary proliferation of connective tissue between the nerve fibre bundles which induces a more extensive atrophy. Where the atrophy actually reaches the disc we must assume the existence of this secondary atrophy.

In the present state of our knowledge we can not expect to restore the calibre of the diseased vessels or to reduce the infiltrated and indurated tissues to their normal condition by therapeutic measures. We may, however, hope to arrest the progress of the disease and limit its extension by the long continued use of iodides, especially the iodide of potassium.